UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,827	06/28/2001	Susan T. Dumais	MS150905.1	5232

27195	7590	12/21/2005

AMIN & TUROCY, LLP
24TH FLOOR, NATIONAL CITY CENTER
1900 EAST NINTH STREET
CLEVELAND, OH 44114

EXAMINER
GODDARD, BRIAN D

ART UNIT	PAPER NUMBER
2161	

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<table>
<tr><td rowspan="2">Office Action Summary</td><td>Application No.
09/893,827</td><td>Applicant(s)
DUMAIS ET AL.</td><td></td></tr>
<tr><td>Examiner
Brian Goddard</td><td>Art Unit
2161</td><td></td></tr>
</table>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2005*.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-27,29-39 and 41* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-27,29-39 and 41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/18/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18

August 2005 has been entered.

2.   Claims 1, 3-27, 29-39 and 41 are pending in this application. Claims 1, 27 and

39 are independent claims. In the Amendment filed 18 August 2005 and entered with

the aforementioned RCE, claims 1, 3, 4, 9-11, 27, 33, 39 and 41 were amended. This

action is non-final.

Claim Rejections - 35 USC § 101

The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

3.   Claim 41 is rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.

Claim 41 recites "A signal adapted to be transmitted between at least two

processes that comprises instructions for performing the method of claim 27." As

described in the USPTO's "Interim Guidelines for Examination of Patent Applications for

Subject Matter Eligibility" (1300 OG 142) on pages 50-57 (Annex IV), signal claims are

considered ineligible for patent protection because they do not fall within any of the four

statutory classes of § 101. Thus, Claim 41 is directed to non-statutory subject matter.

To expedite a complete examination of the instant application, the claims

rejected under 35 U.S.C. 101 (nonstatutory) above are further rejected as set forth

below in anticipation of applicant amending these claims to place them within the four

statutory categories of invention.

Claim Rejections - 35 USC § 103

4.   Claims 1, 3-13, 15-27, 29-39 and 41 are rejected under 35 U.S.C. 103(a) as

being unpatentable over U.S. Patent No. 6,567,805 to Johnson et al. in view of U.S.

Patent No. 5,694,559 to Hobson et al.

Referring to claim 1, Johnson discloses an information retrieval system

substantially as claimed. See Figures 1-4 and the corresponding portions of Johnson's

specification for this disclosure. In particular, Johnson teaches an information retrieval

system, comprising:

a hierarchical analysis component [Search System 123] that receives a query

[See step 201] and processes probabilities [confidence levels or scores] associated with

N categories [See e.g. Fig. 3] that are collectively associated with a top-level classifier

[rule (See Fig. 4)] and individually associated with sublevel classifiers [rule (See Fig. 4)

for each category/sub-category in the hierarchy], each category having one or more

topics [sub-categories], N being an integer, at least one of the one or more topics

associated with a prior probability [based on session history (See Steps 203-204)]

defined prior to receipt of the query [prior to receipt of the current text query in the

dialog]; and

an interactive component [Dialog Manager 121] that provides feedback

[interactive dialog] derived from the query, the probabilities associated with the N

categories, and the prior probability associated with the at least one topic [See Fig. 2

(Step 204) and Summary of the Invention, etc.], the feedback being utilized to determine

[See Fig. 2 (Step 205)] at least one category [dialog categorization] of the N categories

to facilitate retrieval of at least one of the one or more topics.

Johnson's prior probability does not indicate "a likelihood that a particular topic is

desired absent additional information" as claimed. However, Hobson discloses a free

text information retrieval system similar to that of Johnson, wherein at least one of the

one or more topics is associated with a prior probability defined prior to receipt of the

query, the prior probability indicating a likelihood that a particular topic is desired absent

additional information [See Column 8, lines 25-36 (note that this description of prior

probability is the same as the description of prior probability in the instant specification

at page 14, line 30 – page 15, line 6)]; and utilizing the prior probability to provide

feedback [See Column 4, line 28 – Column 5, line 16].

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to incorporate Hobson's usage of prior probability into the system

and method of Johnson so as to pre-store a prior probability for one or more topics

indicating a likelihood that a particular topic is desired absent additional information, and

further utilize Hobson's prior probability in Johnson's query feedback construction, to obtain the invention as claimed. One would have been motivated to do so in order to allow the developers of the software to specify prior probabilities based on their experience and customer research, to more accurately provide feedback to the user, as disclosed by Hobson [See Column 8, lines 25-36].

Referring to claim 3, the system and method of Johnson in view of Hobson as applied to claim 1 above (hereafter 'Johnson/Hobson') discloses the information retrieval system as claimed. See column 4, lines 1-5 of Johnson's specification for the details of this disclosure. In particular, Johnson/Hobson's top-level classifier and sublevel classifiers are provided by at least one of a decision tree, similarity-based and Bayesian-based classification model as claimed.

Referring to claim 4, Johnson/Hobson discloses the information retrieval system as claimed. See column 4, lines 5-7 and column 8, lines 19-38 of Johnson's specification for the details of this disclosure. In particular, Johnson/Hobson teaches the system of claim 3, as above, further comprising an automatic classifier construction component [Text Categorizer 122][1] that employs a learning model [machine learning model (in general), symbolic rule induction (in preferred embodiment)] to build the classifiers as claimed.

Referring to claim 5, Johnson/Hobson's learning model is not explicitly associated with a Support Vector Machine employing Sequential Minimal Optimization (SMO) to train the classifiers as claimed. However, Johnson does state that any system

---

[1] All references within brackets refer to Johnson, unless otherwise noted.

that assigns categories to data containing text (classifier) could be used in the system and could be trained by any machine learning technique. See column 4, lines 1-7 of Johnson's specification for this disclosure. This provides direct suggestion for modifying Johnson's system to include other classifiers, such as support vector machines, trained by other machine learning techniques, such as SMO.

The examiner takes Official notice that support vector machines trained by sequential minimal optimization were classifiers of common practice in the art at the time the invention was made. It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a support vector machine employing sequential minimal optimization as a classifier within Johnson/Hobson's system because of Johnson's direct suggestion as provided above, and further because of the well-known benefit of SMO as a faster training system than most others.

Referring to claim 6, Johnson/Hobson discloses the information retrieval system as claimed. See Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson/Hobson teaches the system of claim 4, as above, "further comprising a data structure [Rule File 407] that includes a mapping [See column 8, lines 30-34] of I possible queries ['features in the text' (of the queries)] and one or more associated topics [category or categories], I being an integer, to enable learning for the classifiers" as claimed.

Referring to claims 7 and 8, Johnson/Hobson discloses the information retrieval system as claimed. Again, see Figure 4 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson/Hobson's data structure [Rule

File 407] is centrally located [See Fig. 4] and is updated via at least one of implicit and explicit user actions [See column 8, lines 24-30] as claimed.

Referring to claim 9, Johnson/Hobson discloses the information retrieval system as claimed. See Figures 2-4 and the corresponding portions of Johnson's specification for this disclosure. In particular, Johnson/Hobson's top-level classifier [Rule Applier 406] is employed to drive the sublevel classifiers at run time [See steps 204-205] to form a hierarchical classification structure [(of categories) See Fig. 3] as claimed.

Referring to claim 10, Johnson/Hobson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, the query and the top-level classifier "are employed to determine [Step 205] the most likely of the N categories" as claimed.

Referring to claim 11, Johnson/Hobson discloses the information retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's specification for this disclosure. In particular, Johnson/Hobson teaches the system of claim 10, as above, "further comprising a context disambiguation component [not numbered] that utilizes the query and the top-level classifier to determine the feedback [Step 204]" as claimed.

Referring to claim 12, Johnson/Hobson discloses the information retrieval system as claimed. Again, see Figure 2 and the corresponding portion of Johnson's specification for this disclosure. Johnson/Hobson teaches the system of claim 11, as above, "wherein the context disambiguation component utilizes the query and the

feedback to drive the sublevel classifiers in order to determine a desired topic [Step

205]" as claimed.

Referring to claim 13, Johnson/Hobson discloses the information retrieval system

as claimed. See Figure 4 and the corresponding portion of Johnson's specification for

this disclosure. In particular, Johnson/Hobson's disambiguation component further

comprises a presentation component [User Interface Manager 401] for interfacing to a

user and an analytical component [Session Manager 402] to facilitate feedback and

decision-making related to the feedback [See above] as claimed.

Referring to claim 15, Johnson/Hobson discloses the information retrieval system

as claimed. See column 9, lines 18-35 of Johnson's specification for this disclosure. In

particular, Johnson/Hobson's analytical component includes a decision analysis [dialog

categorization] for determining the nature and quantity of a clarification dialog as

claimed.

Referring to claim 16, Johnson/Hobson discloses the information retrieval system

as claimed. See Figure 2 and the corresponding portion of Johnson's specification for

this disclosure. In particular, Johnson/Hobson's analytical component includes a

computation [Step 205] of the value of information [confidence levels and scores]

associated with feedback gained during a clarification dialog [dialog categorization] to

guide the nature and quantity of the clarification dialog as claimed.

Referring to claim 17, Johnson/Hobson discloses the information retrieval system

as claimed. See Figures 2 & 4 and the corresponding portions of Johnson's

specification for this disclosure. In particular, Johnson/Hobson's analytical component

employs a rule-based policy [406] that controls if and how dialog is invoked based on

the distribution of probabilities [confidence levels] assigned to topics [sub-categories] at

one or more layers of a classification scheme [hierarchy] as claimed.

Referring to claims 18 and 19, Johnson/Hobson discloses the information

retrieval system as claimed. See Figure 2 and the corresponding portion of Johnson's

specification for this disclosure. In particular, Johnson/Hobson's analytical component

analyzes [Steps 204-205 & 207] probabilistic weights [confidence levels and scores]

associated with each category and related subtopic [confidence levels] and spread

across each category and subtopic [scores] for determining feedback and presentation

to the user as claimed.

Referring to claim 20, Johnson/Hobson discloses the information retrieval system

as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure.

In particular, Johnson/Hobson's presentation component includes a ranked display of

most likely N categories ['a list of relevant categories (ranked by confidence level)'

(Column 2, lines 3-4)] as claimed.

Referring to claim 21, Johnson/Hobson discloses the information retrieval system

as claimed. See column 1, line 65 – column 2, line 7 for the details of this disclosure.

Johnson/Hobson teaches the system of claim 20, as above, "wherein at least one of the

most likely N categories [See claim 20 above] is selected [See column 2, lines 4-7] to

provide a ranked display of one or more topics as claimed.

Referring to claims 22 and 23, Johnson/Hobson discloses the information

retrieval system as claimed. See the Field of the Invention description in column 1,

lines 6-13 for this disclosure. In particular, Johnson/Hobson's information retrieval

system is a network-based [online] help system as claimed.

Referring to claim 24, Johnson/Hobson discloses the information retrieval system

as claimed. See column 4, lines 5-7 and column 8, lines 24-25 for the details of this

disclosure. In particular, Johnson/Hobson's probabilities [confidence levels] are

determined via a hand-crafted analysis [constructed by hand] as claimed.

Referring to claim 25, Johnson/Hobson discloses the information retrieval system

as claimed. See Figure 3 and the corresponding portion of Johnson's specification for

this disclosure. Johnson/Hobson teaches the system of claim 1, as above, further

comprising L levels [hierarchical levels] of N categories, each category having one or

more topics [sub-categories], wherein L and N are integers as claimed.

Claim 26 is rejected on the same basis as claim 1. See the discussion regarding

claim 1 above for this disclosure.

Claims 27 and 29 are rejected on the same basis as claims 1 and 3 respectively.

See the discussions regarding claims 1-3 above for the details of this disclosure.

Claim 30 is rejected on the same basis as claim 6, in light of the basis for claim

29 above. See the discussions regarding claims 1-6 above for the details of this

disclosure.

Claims 31 and 32 are rejected on the same basis as claim 8, in light of the basis

for claim 30 above. See the discussions regarding claims 1-8 above for the details of

this disclosure.

Claims 33-36 are rejected on the same basis as claims 9-12 respectively, in light of the basis for claim 28 above. See the discussions regarding claims 9-12 above for the details of this disclosure.

Claim 37 is rejected on the same basis as claim 15, in light of the basis for claim 27 above. See the discussion regarding claim 15 above for the details of this disclosure.

Claim 38 is rejected on the same basis as claim 17, in light of the basis for claim 35 above. See the discussion regarding claim 17 above for the details of this disclosure.

Claims 39 and 41 are rejected on the same basis as claim 1. See the discussion regarding claim 1 above for the details of this disclosure.

5.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson in view of Hobson as applied to claim 13 above, and further in view of U.S. Patent No. 5,835,087 to Herz et al.

Johnson/Hobson's analytical component does not explicitly include a cost-benefit analysis considering the cost of the dialog with the information value of the dialog as claimed.

Herz discloses a system and method similar to that of Johnson, employing a cost-benefit analysis to consider the cost of interaction with a user compared to the benefit of information gathered. See column 41, line 51 – column 45, line 17 of Herz' specification for this disclosure.

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to add Herz' cost-benefit analysis functionality to

Johnson/Hobson's system so as to consider the cost of the dialog with the information

value of the dialog to obtain the invention as claimed. One would have been motivated

to do so in order to maximize the relevance of retrieved information (benefit) while

minimizing the usage of system resources (cost), as was a common desire of the art.

Response to Arguments

6.   Applicant's arguments with respect to claims 1, 3-27, 29-39 and 41 have been

considered but are moot in view of the new ground(s) of rejection.

Conclusion

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Brian Goddard whose telephone number is 571-272-

4020. The examiner can normally be reached on M-F, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

bdg
14 December 2005

SAFET METJAHIC
SUPERVISORY PATENT ⌐
TECHNOLOGY CENT⌐